U.S. HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
COMMITTEE ON SCIENCE AND TECHNOLOGY

HEARING CHARTER

Strengthening Forensic Science in the United States: The Role of the National Institute of Standards and Technology

Tuesday, March 10, 2009
10:00 a.m. – 12:00 p.m.
2318 Rayburn House Office Building

I. Purpose

On Tuesday, March 10, 2009, the Subcommittee on Technology and Innovation will convene a hearing to review the scientific and technical issues raised by the recently released National Academies report *Strengthening Forensic Science in the United States: A Path Forward*. The hearing will discuss issues related to the accuracy, standards, reliability, and validity of forensic science, as well as how the expertise of the National Institute of Standards and Technology (NIST) in forensics related research, developing standards and certified test methodologies, and performing laboratory accreditation may be leveraged to implement some of the recommendations in the report.

II. Witnesses

Mr. Pete Marone is the Director of Technical Services at the Virginia Department of Forensic Science.

Ms. Carol Henderson is the Director of the National Clearing House for Science, Technology and the Law; a Professor of Law at Stetson University College of Law; and the Past President at the American Academy of Forensic Sciences.

Mr. John Hicks is the retired Director of the Office of Forensic Services, New York State Division of Criminal Justice Services; and the former Director at the FBI Laboratory.

Mr. Peter J. Neufeld is the Co-founder and Co-director of the Innocence Project.

Dr. J.C. Upshaw Downs is the Coastal Regional Medical Examiner at the Georgia Bureau of Investigation.

III. Issues and Concerns

Prompted by concerns over the reliability and variability of forensic evidence, the National Academy of Sciences Committee on Identifying the Needs of the Forensic Science Community

recently completed a study on the status of the nation's crime labs, *Strengthening Forensic Science in the United States: A Path Forward*. The committee found that many of the techniques and technologies used in forensic science lack rigorous scientific discipline. In addition, the committee reported a lack of standard accreditation processes for individual labs and the technicians who collect and process evidence.

The committee recommended that a new agency, separate from the legal and law enforcement communities, be created to provide oversight to correct these inconsistencies which impact the accuracy, reliability, and validity of forensic evidence. Many of the functions envisioned by the report committee for this new agency already are, or could be, performed at NIST. These activities include standards setting, the creation of validated test methodologies, and the development of standard practices. Indeed, the report recommends this new agency specifically work with NIST in several areas.

The report committee notes that on two fronts the forensic disciplines lack consistent science. The first concern is that different forensic disciplines vary in the degree to which they are based on a well-tested, rigorous scientific methodology. For instance, whereas the methodology for fingerprint identification is scientifically proven, the analysis of other forensic evidence, like bite-mark comparisons, does not follow a prescribed and scientifically verified methodology. The second issue with consistency is the degree to which some disciplines rely on inexact interpretation to reach their findings and report their conclusions. This is evident in the practice of identifying partial or smudged fingerprints, when practitioners rely on judgment, instead of a reliable scientific methodology, which can introduce human error and bias. Furthermore, there is no consistent scale or nomenclature to report these types of findings. For example, the exact same finding could be reported as "a match" in one jurisdiction or "consistent with" in another jurisdiction.

IV. Background

DNA evidence has been widely used in the legal system for many years. DNA's accepted use in this capacity stems from the fact that it has been rigorously shown to identify, with a high degree of certainty, a connection between evidence and an individual of interest. This certainty can be traced back to efforts of NIST on the development of both the test methodologies for DNA analysis and the standard reference materials that can be used for laboratory as well as test certification. There are other common techniques used by forensic scientists such as fingerprint analysis, ballistic tests, hair matching, pattern recognition, and paint matching that could benefit from a robust research and development program. Many of these techniques are based on observation, experience, and reasoning lack validation on their accuracy and reliability. Because of these shortcomings, many of the forensic tests can have high error rates. To resolve these issues, additional research and experimental testing detailing the reliability of the methods is required.

Lack of Federal Standards

The forensic science community includes crime scene investigators, state and local crime laboratories, medical examiners, private forensic laboratories, and law enforcement identification

units. They may use registries of information, databases for matching, or reference materials for comparisons of evidence. The registries need a common interface to aid in training and accessibility for all users in the community. The databases need to be interoperable to allow for communication between different sources. In addition, reference materials must be standardized so that test equipment can all be calibrated to an accurate and reliable level. Currently there are no clear and consistent standards for the forensic community to apply the tools available to them; instead there are many different methodologies with no single certification method for practitioners. Without clear and measurable standards for all forensic science disciplines, not just DNA analysis, it is impossible to assess whether one organization is properly conducting analyses. In addition, it is difficult to ascertain the validity of a specific forensic science methodology. The report recommends that standards need to be set for all facets of forensic science and a certification program needs to be developed for both the practitioners and laboratories.